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<110>   Cahoon, Edgar B.
        Kinney, Anthony
        Klein, Thodore
        Lee, Jian Ming
        Pearlstein, Richard
        Rafalski, J. Antoni
        Shen, Jennie
        Thorpe, Cathy
        Tingey, Scott
        Weng, Zude

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gaagaagatc aaagggacgg tggttcttat gagaagcaat gttttggact tcaccgaatt  180
tcattcctca cttcttgacg gcgtcactga gctcttgggc ggcggaattt cattgcaact  240
tatcagtgct actcacgctt ccaacgactc gcgagggaaa gttggaaagg gggcgtttct  300
ggagaggtgg ctgacttcag ttccgccact gttcgctgga gagtctgtgt ttcaagtgaa  360
ctttgattgg gaagagaact ttgggatttc caaggagctt tcttcataaa aaatgggcac  420
accagtgagt tcttcctcaa gtctgtaact ccnggaggat ttcctggcnt tggaaggtcc  480
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Arg Val Thr Asn Ile Gly Gly Lys Lys Ile Lys Gly Thr Val Val Leu
        35                  40                  45

Met Arg Ser Asn Val Leu Asp Phe Thr Glu Phe His Ser Ser Leu Leu
    50                  55                  60
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2

Asp Gly Val Thr Glu Leu Leu Gly Gly Gly Ile Ser Leu Gln Leu Ile
65   70   75   80

Ser Ala Thr His Ala Ser Asn Asp Ser Arg Gly Lys Val Gly Lys Gly
                85   90   95

Ala Phe Leu Glu Arg Trp Leu Thr Ser Val Pro Pro Leu Phe Ala Gly
            100   105   110

Glu Ser Val Phe Gln Val Asn Phe Leu Gly Arg Glu Leu Trp Asp Phe
        115   120   125

Gln Gly Ala Phe Phe Ile Lys Asn Gly His Thr Ser Glu Phe Phe Leu
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Lys Ser Val Thr Pro Gly Gly Phe Pro Gly Xaa Lys Val His Phe Asp
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Cys Asn Ser Xaa Val Xaa Pro Ser Arg Arg
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atccttagga aagatgggac tttgatgcca ttagccattg agctaagcct gcccaaccca   180
agaggagatg aatatggtgc catatgcaaa gtctacaccc cggctcaaca tggtgtagaa   240
gcctcccttt ggcagcttgc ttaagcctat gtcgtggtta acgactcttg tatccacgaa   300
tccgtccagt cattgggttt gaacacgcaa gcagtgattg agcatttgta atcgcgacaa   360
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tcacatcnna gtanacagga gattcctccg caattacaag aatggntttn acgacantcc   540
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             20   25   30

Thr Tyr Ala Ser Arg Thr Leu Leu Ile Leu Arg Lys Asp Gly Thr Leu
             35   40   45

Met Pro Leu Ala Ile Glu Leu Ser Leu Pro Asn Pro Arg Gly Asp Glu
     50   55   60

Tyr Gly Ala Ile Cys Lys Val Tyr Thr Pro Ala Gln His Gly Val Glu
 65   70   75   80

Ala Ser Leu Trp Gln Leu Ala Xaa Ala Tyr Val Val Val Asn Asp Ser
                 85   90   95

Cys Ile His Glu Ser Val
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ggngacggcg tcggnggagg cgtcgccggc catcgggcag atgtacttcc agcgcgccgt 180
cgacgacatc ggcgacctcc tcggcaagac gctgctgctc gagctcgtca gctccgagct 240
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gctggtggag aacgagcacc acaaggaggt cttcatcaag gagatcaagc tcgtcaccgg 420
cggcgacagc agcaccgccg tcaccttcga ctgcaactcc tgggtgcact ccaagttcga 480
caacccggag aagcgcatct tcttcaccct caagtcatac ctgccgtccg acacgcccaa 540
ggggctggag gacctgagga agaaagacct gcaggcgctg cgcggcgacg ggcacggcga 600
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5

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Glu Lys Thr Arg Val Thr Ala Tyr Ala His Lys Thr Leu Arg Glu Gly
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His Tyr Glu Ala Glu Phe Lys Val Pro Ala Ser Phe Gly Pro Val Gly
        35                  40                  45

Ala Val Leu Val Glu Asn Glu His His Lys Glu Val Phe Ile Lys Glu
        50                  55                  60

Ile Lys Leu Val Thr Gly Gly Asp Ser Ser Thr Ala Val Thr Phe Asp
65                  70                  75                  80

Cys Asn Ser Trp Val His Ser Lys Phe Asp Asn Pro Glu Lys Arg Ile
                85                  90                  95

Phe Phe Thr Leu Lys Ser Tyr Leu Pro Ser Asp Thr Pro Lys Gly Leu
            100                 105                 110

Glu Asp Leu Arg Lys Lys Asp Leu Gln Ala Leu Arg Gly Asp Gly His
            115                 120                 125

Gly Glu Arg Lys Val Phe Glu Arg Val Tyr Asp Tyr Asp Val Tyr Asn
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cacatcacat cggcaggcga gggacggagc gagcagggaa gcccatccac cagccagcca 180
ccgcgttcct gagaagcgaa gagcgagaaa aggcgaaana gcggncatgt tctggcacgg 240
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cacggtgagg ctggtcaaga aggaggtgct ggacgtcggc gacttcaacg cctcgctcct 360
cgacggcgtc cacaggatcc tcggctggga cgacggcgtc gccttcagct cgtcagcgcc 420
accgcgggcg acccccagcaa cggggggccgt ggcaaggtgg ggaaggcggc gcacctggag 480
gaggcggtgg tgtcgctcaa gtcacggcgg acggggagan cgtgtaccgg gtgaagcttc 540
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            20   25   30

Cys Leu Ala Ser Leu Ile Ala Gly Thr Ser His Arg Gln Ala Arg Asp
            35   40   45

Gly Ala Ser Arg Glu Ala His Pro Pro Ala Ser His Arg Val Pro Glu
        50   55   60

Lys Arg Arg Ala Arg Lys Gly Glu Xaa Ala Xaa Met Phe Trp His Gly
65   70   75   80

Val Ala Asp Arg Leu Thr Gly Lys Asn Lys Glu Ala Trp Ser Glu Gly
                85   90   95

Lys Ile Arg Gly Thr Val Arg Leu Val Lys Lys Glu Val Leu Asp Val
                100   105   110

7

Gly Asp Phe Asn Ala Ser Leu Leu Asp Gly Val His Arg Ile Leu Gly
        115   120   125

Trp Asp Asp Gly Val Ala Phe Ser Ser Ser Ala Pro Pro Arg Ala Thr
    130   135   140

Pro Ala Thr Gly Ala Val Ala Arg Trp Gly Arg Arg Arg Thr Trp Arg
145   150   155   160

Arg Arg Trp Cys Arg Ser Ser His Gly Gly Arg Gly
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cttggacgtc accagcatcg ccggctccct cctcgacggc gtcggcgagt tcctcggccg 240
cggcgtcacc tgccagctta tcagctccac cgtcgtcgac cctaacaacg gcaaccgcgg 300
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cagcgagaac cagttccgcg tcaccttcga ctgggaggtg gagaagcagg gcatcccggg 420
cgccatcatc gtcaagaaca accacgcctn cgagntcttc ctcaagacca tcaccctcaa 480
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9

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            20                  25                  30

His Leu Lys Gly Asn Val Val Leu Val Arg Lys Thr Val Leu Gly Leu
            35                  40                  45

Asp Val Thr Ser Ile Ala Gly Ser Leu Leu Asp Gly Val Gly Glu Phe
        50                  55                  60

Leu Gly Arg Gly Val Thr Cys Gln Leu Ile Ser Ser Thr Val Val Asp
65                  70                  75                  80

Pro Asn Asn Gly Asn Arg Gly Lys Leu Gly Ala Glu Ala Ser Leu Glu
                85                  90                  95

Gln Trp Leu Leu Asn Pro Pro Pro Leu Leu Ser Ser Glu Asn Gln Phe
            100                 105                 110

Arg Val Thr Phe Asp Trp Glu Val Glu Lys Gln Gly Ile Pro Gly Ala
            115                 120                 125

Ile Ile Val Lys Asn Asn His Ala Xaa Glu Xaa Phe Leu Lys Thr Ile
        130                 135                 140

Thr Leu Asn Asp Val Pro Gly Thr Gly Pro Ser Ser Ser Ser Pro Thr
145                 150                 155                 160

His Gly Ser Thr Arg Ser Pro Ser Thr Ala Thr Thr Ala Ser Ser Ser
                165                 170                 175

Pro Thr Thr Arg Thr Phe Pro Ser Gln Met Pro Ala Ala Leu Lys Pro
            180                 185                 190

Thr Xaa Thr Thr Ala Ser Gly Thr Xaa Thr Ile Val Phe Val Ala Asn
        195                 200                 205

Ser Trp Ile Tyr Pro Gln Ser Lys Tyr Arg Tyr Asn Arg Val Phe Phe
    210                 215                 220

Ser Asn Asp Thr Tyr Leu Pro Lys Pro Asp Ala Gly Gly Ala Glu Ala
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Pro Xaa Gln Glu His Glu
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tcggcgggaa gaagatcaaa gggacggtgg ttcttatgag aagcaatgtt ttggacttca   180
ccgaatttca ttcctcactt cttgacggcg tcactgagct cttgggcggc ggaatttcat   240
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10

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                20   25   30

Arg Val Thr Asn Ile Gly Gly Lys Lys Ile Lys Gly Thr Val Val Leu
            35   40   45

11

Met Arg Ser Asn Val Leu Asp Phe Thr Glu Phe His Ser Ser Leu Leu
    50   55   60

Asp Gly Val Thr Glu Leu Leu Gly Gly Gly Ile Ser Leu Gln Leu Ile
65   70   75   80

Ser Ala Thr His Ala Ser Asn Asp Ser Arg Gly Lys Val Gly Lys Gly
               85   90   95

Ala Phe Leu Glu Arg Trp Leu Thr Ser Val Pro Pro Leu Phe Ala Gly
           100   105   110

Glu Ser Val Phe Gln Val Asn Phe Asp Trp Glu Glu Asn Phe Gly Phe
        115   120   125

Pro Gly Ala Phe Phe Ile Lys Asn Gly His Thr Ser Glu Phe Phe Leu
    130   135   140

Lys Ser Val Thr Leu Glu Asp Val Pro Gly Phe Gly Arg Val His Phe
145   150   155   160

Asp Cys Asn Ser Trp Val Tyr Pro Ser Arg Arg Tyr Lys Lys Asp Arg
           165   170   175

Ile Phe Phe Ala Asn His Thr Cys Leu Pro Ile Asp Thr Pro Asp Ser
        180   185   190

Leu Arg Lys Tyr Arg Glu Glu Glu Leu Leu Asn Leu Arg Gly Asp Gly
       195   200   205

Thr Gly Glu Arg Lys Glu Trp Asp Arg Ile Tyr Asp Tyr Asp Val Tyr
    210   215   220

Asn Asp Leu Cys Asp Pro Asn Gly Gly Pro Asn Leu Val Arg Pro Ile
225   230   235   240

Leu Gly Gly Ser Asp Gln Tyr Pro Tyr Pro Arg Arg Gly Arg Thr Gly
        245   250   255

Arg Pro Pro Ala Arg Lys Asp His Lys Tyr Glu Ser Arg Leu Ser Asp
        260   265   270

Val Met Ser Leu Asn Ile Tyr Val Pro Arg Asp Glu Asn Phe Gly His
        275   280   285

Leu Lys Met Ala Asp Phe Leu Gly Asn Thr Leu Lys Val Leu Ser Thr
        290   295   300

Ser Ile Gln Pro Gly Leu Glu Ser Ile Phe Asp Ser Thr Pro Gly Glu
305   310   315   320

Phe Asp Lys Phe Lys Glu Val Asp Asp Leu Phe Glu Arg Gly Phe Pro
         325   330   335

Ile Pro Leu Asn Ile Phe Lys Asn Leu Thr Glu Asp Leu Ala Pro Pro
        340   345   350

Leu Phe Lys Ala Phe Leu Arg Ser Asp Gly Glu Arg Phe Leu Lys Tyr
        355   360   365

12

```
Pro Thr Pro Gln Val Ile Lys Asp Asn Lys Leu Gly Trp Arg Thr Asp
    370             375             380

Glu Glu Phe Ala Arg Glu Met Ile Ala Gly Val Asn Pro Leu Ile Ile
385             390             395                 400

Arg Arg Leu Glu Val Phe Pro Pro Leu Ser Lys Leu Asp Pro His Val
            405             410             415

Tyr Gly Asn Gln Asn Ser Thr Met Thr Glu Glu Gln Ile Lys His Gly
            420             425             430

Leu Asp Gly Leu Thr Val Asp Glu Ala Ile Lys Glu Asn Lys Leu Tyr
        435             440             445

Ile Leu Asp His His Asp Ala Leu Met Pro Tyr Leu Arg Arg Ile Asn
    450             455             460

Ser Thr Ser Thr Lys Thr Tyr Ala Thr Arg Thr Leu Leu Phe Leu Lys
465             470             475                 480

Asp Asp Ser Thr Leu Lys Pro Leu Ala Ile Glu Leu Ser Leu Pro His
            485             490             495

Pro Gln Gly Asp Glu His Gly Ala Ile Ser Lys Leu Tyr Phe Pro Ala
            500             505             510

Glu Gly Arg Val Glu Ser Ala Ile Trp Gln Leu Ala Lys Ala Tyr Val
        515             520             525

Ala Val Asn Asp Ser Gly Tyr His Gln Leu Asn Ser His Trp Leu His
    530             535             540

Thr His Ala Val Leu Glu Pro Phe Val Ile Thr Thr His Arg Arg Leu
545             550             555                 560

Ser Val Leu His Pro Ile His Lys Leu Leu Ala Pro His Tyr Lys Asp
            565             570             575

Thr Met Phe Ile Asn Ala Ser Ala Arg Gln Val Leu Ile Asn Ala Gly
            580             585             590

Gly Leu Ile Glu Ser Thr Gln Phe Pro Ala Lys Tyr Ala Met Glu Leu
        595             600             605

Ser Ser Tyr Ile Tyr Lys Glu Trp Lys Phe Pro Asp Glu Ala Leu Pro
    610             615             620

Thr Asn Leu Ile Lys Arg Gly Val Ala Ile Glu Asp Ser Gly Ser Pro
625             630             635                 640

His Gly Val Arg Leu Leu Ile Asn Asp Tyr Pro Phe Ala Val Asp Gly
            645             650             655

Leu Glu Ile Trp Ser Ala Ile Lys Thr Trp Val Thr Asp Tyr Cys Ser
            660             665             670

Leu Tyr Tyr Lys Asp Asp Asp Ala Ile Arg Asn Asp Val Glu Leu Gln
        675             680             685
```

13

```
Ser Trp Trp Lys Glu Leu Arg Glu Lys Gly His Thr Asp Lys Lys Asp
    690               695               700
Glu Pro Trp Trp Pro Lys Met Gln Thr Phe Ser Glu Leu Ile Glu Ser
705               710               715               720
Cys Thr Ile Ile Ile Trp Ile Ser Ser Ala Leu His Ala Ala Val Asn
                725               730               735
Phe Gly Gln Tyr Pro Tyr Gly Gly Tyr Val Pro Asn Arg Pro Thr Thr
            740               745               750
Ser Arg Arg Phe Met Pro Glu Val Gly Thr Ala Glu Tyr Lys Glu Val
        755               760               765
Glu Ser Asn Pro Glu Lys Ala Phe Leu Arg Thr Ile Ser Ser Gln Ile
    770               775               780
Val Ala Leu Leu Gly Leu Ser Ile Ile Glu Ile Leu Ser Lys His Ala
785               790               795               800
Ser Asp Glu Val Tyr Leu Gly Gln Arg Ala Ser Ile Glu Trp Thr Ser
                805               810               815
Asp Lys Ser Ala Ile Glu Ala Phe Glu Lys Phe Gly Lys Glu Leu Phe
            820               825               830
Glu Val Glu Asp Arg Ile Met Arg Arg Asn Gln Asp Val Asn Leu Lys
        835               840               845
Asn Arg Ala Gly Pro Val Asn Met Pro Tyr Thr Leu Leu Val Pro Ser
    850               855               860
Ser Thr Glu Gly Leu Thr Gly Arg Gly Ile Pro Asn Ser Ile Ser Ile
865               870               875               880

<210>   13
<211>   1577
<212>   DNA
<213>   Impatiens balsamia

<400>   13
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tttgatgcca tacttgggga gaatcaacac aaccaccaca aagacttatg cttcaaggac    120
tcttcttatc cttaggaaag atgggacttt gatgccatta gccattgagc taagcctgcc    180
caacccaaga ggagatgaat atggtgccat atgcaaagtc tacaccccgg ctcaacatgg    240
tgtagaagcc tccctttggc agcttgctaa agcctatgtc gtggttaacg actctggtat    300
ccacgaactc gtcagtcatt ggttgaacac gcatgcagtg attgagccat ttgtaatcgc    360
gacaaacaga caactgagcg tacttcatcc gatacaaaag ttgttgcacc ctcattttcg    420
agacacgatg aacattaatg caatcgcaag gaatgtacta atcaacgcgg gtggagttat    480
tgagaatacg tttttcacat caaagtatag catggagatg tcatccgcaa tttacaagaa    540
ttggattttc accgaccagt ctctccccgt ggaccttatt aaaaggggga ttgcggttaa    600
ggatgataaa gaaaaacgcg gtcttcgcct actcatagag gattacccgt atgcggttga    660
cgggctagag atatggtttg cgataaagac atgggtcgag gactattgcg acttctacta    720
caaaggcgac gaggcagtta agaatgacac cgagctccaa gcatggtgga aggagctaaa    780
ggaagttggc cacggagaca aaaggaatga accgtggtgg cccaaaatgg aaacaaggaa    840
agatctattg gagacatgca caatcatcat atgggtggca tctgcccttc atgcagccct    900
gaatttcggg caatacccat atggcggata ccatcctaac cggcccacaa atagccgaag    960
gctaatgccc gaagtgggta gtcctgaatt cgaggagttg aagacaaatc cggaccaaat   1020
tttgttgaaa acgttgagtt ctaaagctca aactcttctc gaggttgcta tcattgagat   1080
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14

```
tttgtcgagg catacgtcgg atgaggtcta tctcgggcag agggacacgc ccgagtggac 1140
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ggtaaggatt attgagatga acaatgatga gagtctcaag aatagaaatg gaccagtcaa 1260
aataccttat actttgctat ttccaaccag ttcaagtggg ctaactggga agggcatatc 1320
aaatagtgtg tctatttgaa tgatccaaac tggctagcat taatcatata tataatatat 1380
taatatattt cttttcattt ctaaaaatgt attaatttta gaggttattg tttaaacatt 1440
ataattgtct ttattgtttg tattaaaatg tatcccacta tgtaattata tacatattta 1500
tgaaataaat gtatttgtat ggtaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1560
aaaaaaaaaa aaaaaaa                                               1577
```

<210> 14
<211> 445
<212> PRT
<213> Impatiens balsamia

<400> 14
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His Glu Val Glu Glu Ala Met Asn Gln Asn Lys Ile Phe Ile Leu Asp
 1               5                  10                  15

His His Asp Ser Leu Met Pro Tyr Leu Gly Arg Ile Asn Thr Thr Thr
            20                  25                  30

Thr Lys Thr Tyr Ala Ser Arg Thr Leu Leu Ile Leu Arg Lys Asp Gly
        35                  40                  45

Thr Leu Met Pro Leu Ala Ile Glu Leu Ser Leu Pro Asn Pro Arg Gly
    50                  55                  60

Asp Glu Tyr Gly Ala Ile Cys Lys Val Tyr Thr Pro Ala Gln His Gly
65                  70                  75                  80

Val Glu Ala Ser Leu Trp Gln Leu Ala Lys Ala Tyr Val Val Val Asn
                85                  90                  95

Asp Ser Gly Ile His Glu Leu Val Ser His Trp Leu Asn Thr His Ala
            100                 105                 110

Val Ile Glu Pro Phe Val Ile Ala Thr Asn Arg Gln Leu Ser Val Leu
            115                 120                 125

His Pro Ile Gln Lys Leu Leu His Pro His Phe Arg Asp Thr Met Asn
    130                 135                 140

Ile Asn Ala Ile Ala Arg Asn Val Leu Ile Asn Ala Gly Gly Val Ile
145                 150                 155                 160

Glu Asn Thr Phe Phe Thr Ser Lys Tyr Ser Met Glu Met Ser Ser Ala
                165                 170                 175

Ile Tyr Lys Asn Trp Ile Phe Thr Asp Gln Ser Leu Pro Val Asp Leu
            180                 185                 190

Ile Lys Arg Gly Ile Ala Val Lys Asp Asp Lys Glu Lys Arg Gly Leu
            195                 200                 205

Arg Leu Leu Ile Glu Asp Tyr Pro Tyr Ala Val Asp Gly Leu Glu Ile
    210                 215                 220

Trp Phe Ala Ile Lys Thr Trp Val Glu Asp Tyr Cys Asp Phe Tyr Tyr
225                 230                 235                 240
```

15

```
Lys Gly Asp Glu Ala Val Lys Asn Asp Thr Glu Leu Gln Ala Trp Trp
            245                 250                 255

Lys Glu Leu Lys Glu Val Gly His Gly Asp Lys Arg Asn Glu Pro Trp
            260             265                 270

Trp Pro Lys Met Glu Thr Arg Lys Asp Leu Leu Glu Thr Cys Thr Ile
            275             280                 285

Ile Ile Trp Val Ala Ser Ala Leu His Ala Ala Leu Asn Phe Gly Gln
    290             295                 300

Tyr Pro Tyr Gly Gly Tyr His Pro Asn Arg Pro Thr Asn Ser Arg Arg
305             310                 315                 320

Leu Met Pro Glu Val Gly Ser Pro Glu Phe Glu Glu Leu Lys Thr Asn
            325                 330                 335

Pro Asp Gln Ile Leu Leu Lys Thr Leu Ser Ser Lys Ala Gln Thr Leu
            340                 345                 350

Leu Glu Val Ala Ile Ile Glu Ile Leu Ser Arg His Thr Ser Asp Glu
            355                 360                 365

Val Tyr Leu Gly Gln Arg Asp Thr Pro Glu Trp Thr Lys Asp Glu Glu
    370             375                 380

Pro Leu Lys Ala Phe Asp Lys Phe Gly Lys Lys Leu Ala Glu Ile Glu
385             390                 395                 400

Val Arg Ile Ile Glu Met Asn Asn Asp Glu Ser Leu Lys Asn Arg Asn
            405                 410                 415

Gly Pro Val Lys Ile Pro Tyr Thr Leu Leu Phe Pro Thr Ser Ser Ser
            420                 425                 430

Gly Leu Thr Gly Lys Gly Ile Ser Asn Ser Val Ser Ile
        435             440                 445
```

<210> 15
<211> 3134
<212> DNA
<213> Zea mays

<400> 15
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ttattgccgg cacatcacat cggcaggcga gggacggagc gagcagggaa gcccatccac   180
cagccagcca ccgcgttcct gagaagcgag gagcgagaaa agcgaagagc ggccatgttc   240
tggcacgggg tcgcggaccg gctgacggga aagaacaagg aggcgtggag cgagggcaag   300
atccgcggca cggtgaggct ggtcaagaag gaggtgctgg acgtcggcga cttcaacgcc   360
tcgctcctcg acggcgtcca caggatcctc ggctgggacg acggcgtcgc cttccagctc   420
gtcagcgcca ccgcggccga ccccagcaac gggggccgtg gcaaggtggg gaaggcggcg   480
cacctggagg aggcggtggt gtcgctcaag tccacggcgg acggggagac cgtgtaccgg   540
gtgagcttcg agtgggacga gtcgcagggc atccgggcg ccgtcctggt caggaacctg   600
cagcacgccg agttcttcct caagacgctc accctcgagg gcgtcccagg caagggcacc   660
gtcgtcttcg tcgccaactc gtgggtctac ccgcacaagc tctactccca ggaacgcatc   720
ttcttcgcca acgacaccta tctgccgagc aaaatgccgg cggcgttggt gccttatcgg   780
caagatgagc tcaagattct ccgtggcgac gataatcctg gaccatacca ggagcatgat   840
```

16

```
cgcgtctacc gttacgacta ctacaatgac cttggtgatc ccgacaaggg cgaagagcac  900
gctcggccga tcctcggtgg cagccaagaa cacccgtatc cccgtcgctg cagaactggc  960
cggcacccaa caaagaaaga cccaaattcg gagagcaggc ttttcctgct gaacctgaac 1020
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gcggtgatcg agccgttcgt aatcgcgaca aaccggcagc tcagcgtggt gcatccgtg  1920
cacaagctgc tgagcccgca ctaccgtgac acgctgaaca tcaacgccct ggcacgccag 1980
acactcatca acgccggcgg cgtcttcgag cgcaccgtgt ccctgcaaa gtacgcgctg  2040
gggatgtcgg cagacgtgta caagagctgg aatttcaacg agcaggctct cccagcagat 2100
ctcgtcaaga gaggtgtggc tgtgccggac cagtcaagcc catatggtgt ccgactgctg 2160
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gtcaaggagt acctggacat ctactaccct aacgacggcg agctccagcg tgacgtggag 2280
ctgcaggcgt ggtggaagga ggtgcgtgag gaggcgcacg gcgacctcaa ggaccgagac 2340
tggtggccca ggatggacac cgtccagcag ctggctaggg cgtgcacgac catcatctgg 2400
gtggcatccg cgctgcacgc ggctgtcaac tttgggcagt acccatacgc cgggtacctc 2460
ccgaaccggc cgacggccag ccggcgcccg atgccggagc caggcagcca cgactacaag 2520
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gtgtacctcg ccagcgtga cgagcctgat cgctggacgt cagacgccaa ggcgctggat  2700
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atgatctttg tagggttgag agaggagtcc acgcttgaat attgttgtca tgtatgtaat 3060
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```

<210> 16
<211> 887
<212> PRT
<213> Zea mays

<400> 16

```
Met Phe Trp His Gly Val Ala Asp Arg Leu Thr Gly Lys Asn Lys Glu
 1               5                  10                  15


Ala Trp Ser Glu Gly Lys Ile Arg Gly Thr Val Arg Leu Val Lys Lys
            20                  25                  30


Glu Val Leu Asp Val Gly Asp Phe Asn Ala Ser Leu Leu Asp Gly Val
            35                  40                  45


His Arg Ile Leu Gly Trp Asp Asp Gly Val Ala Phe Gln Leu Val Ser
        50                  55                  60


Ala Thr Ala Ala Asp Pro Ser Asn Gly Gly Arg Gly Lys Val Gly Lys
65                  70                  75                  80
```

17

Ala Ala His Leu Glu Glu Ala Val Val Ser Leu Lys Ser Thr Ala Asp
              85   90   95

Gly Glu Thr Val Tyr Arg Val Ser Phe Glu Trp Asp Glu Ser Gln Gly
          100   105   110

Ile Pro Gly Ala Val Leu Val Arg Asn Leu Gln His Ala Glu Phe Phe
          115   120   125

Leu Lys Thr Leu Thr Leu Glu Gly Val Pro Gly Lys Gly Thr Val Val
      130   135   140

Phe Val Ala Asn Ser Trp Val Tyr Pro His Lys Leu Tyr Ser Gln Glu
145   150   155   160

Arg Ile Phe Phe Ala Asn Asp Thr Tyr Leu Pro Ser Lys Met Pro Ala
          165   170   175

Ala Leu Val Pro Tyr Arg Gln Asp Glu Leu Lys Ile Leu Arg Gly Asp
          180   185   190

Asp Asn Pro Gly Pro Tyr Gln Glu His Asp Arg Val Tyr Arg Tyr Asp
          195   200   205

Tyr Tyr Asn Asp Leu Gly Asp Pro Asp Lys Gly Glu Glu His Ala Arg
    210   215   220

Pro Ile Leu Gly Gly Ser Gln Glu His Pro Tyr Pro Arg Arg Cys Arg
225   230   235   240

Thr Gly Arg His Pro Thr Lys Lys Asp Pro Asn Ser Glu Ser Arg Leu
          245   250   255

Phe Leu Leu Asn Leu Asn Ile Tyr Val Pro Arg Asp Glu Arg Phe Gly
          260   265   270

His Leu Lys Met Ser Asp Phe Leu Gly Tyr Ser Leu Lys Thr Ile Ile
          275   280   285

Glu Ala Val Leu Pro Thr Leu Gly Thr Phe Val Asp Asp Thr Pro Lys
290   295   300

Glu Phe Asp Ser Phe Glu Asp Ile Leu Gly Leu Tyr Glu Leu Gly Pro
305   310   315   320

Glu Ala Pro Asn Asn Pro Leu Ile Ala Glu Ile Arg Lys Lys Ile Pro
          325   330   335

Ser Glu Phe Leu Arg Ser Ile Leu Pro Asn Gly Ser His Asp His Pro
          340   345   350

Leu Lys Met Pro Leu Pro Asn Val Ile Lys Ser Asp Val Leu Lys Lys
          355   360   365

Ala Pro Glu Phe Lys Phe Gly Trp Arg Thr Asp Glu Glu Phe Ala Arg
          370   375   380

Glu Thr Leu Ala Gly Val Asn Pro Val Ile Ile Lys Arg Leu Thr Glu
385   390   395   400

18

```
Phe Pro Ala Lys Ser Thr Leu Asp Pro Arg Gln Tyr Gly Asp His Thr
              405                 410                 415

Ser Lys Ile Thr Glu Ala His Ile Arg His Asn Met Gly Gly Leu Ser
              420                 425                 430

Val Gln Asn Ala Leu Arg Asn Lys Arg Leu Phe Ile Leu Asp His His
              435                 440                 445

Asp His Phe Met Pro Tyr Leu Asp Glu Ile Asn Glu Leu Glu Gly Asn
    450                 455                 460

Phe Ile Tyr Ala Ser Arg Thr Leu Leu Phe Leu Lys Asp Asp Gly Thr
465                 470                 475                 480

Leu Lys Pro Leu Ala Ile Glu Leu Ser Leu Pro His Pro Asp Gly Gln
              485                 490                 495

Gln Arg Gly Ala Val Ser Lys Val Tyr Thr Pro Ala His Thr Gly Val
              500                 505                 510

Glu Gly His Val Trp Gln Leu Ala Lys Ala Tyr Ala Cys Val Asn Asp
              515                 520                 525

Ser Ala Trp His Gln Leu Ile Ser His Trp Leu Asn Thr His Ala Val
    530                 535                 540

Ile Glu Pro Phe Val Ile Ala Thr Asn Arg Gln Leu Ser Val Val His
545                 550                 555                 560

Pro Val His Lys Leu Leu Ser Pro His Tyr Arg Asp Thr Leu Asn Ile
              565                 570                 575

Asn Ala Leu Ala Arg Gln Thr Leu Ile Asn Ala Gly Gly Val Phe Glu
              580                 585                 590

Arg Thr Val Phe Pro Ala Lys Tyr Ala Leu Gly Met Ser Ala Asp Val
              595                 600                 605

Tyr Lys Ser Trp Asn Phe Asn Glu Gln Ala Leu Pro Ala Asp Leu Val
              610                 615                 620

Lys Arg Gly Val Ala Val Pro Asp Gln Ser Ser Pro Tyr Gly Val Arg
625                 630                 635                 640

Leu Leu Ile Lys Asp Tyr Pro Tyr Ala Val Asp Gly Leu Val Ile Trp
              645                 650                 655

Trp Ala Ile Glu Arg Trp Val Lys Glu Tyr Leu Asp Ile Tyr Tyr Pro
              660                 665                 670

Asn Asp Gly Glu Leu Gln Arg Asp Val Glu Leu Gln Ala Trp Trp Lys
              675                 680                 685

Glu Val Arg Glu Glu Ala His Gly Asp Leu Lys Asp Arg Asp Trp Trp
              690                 695                 700

Pro Arg Met Asp Thr Val Gln Gln Leu Ala Arg Ala Cys Thr Thr Ile
705                 710                 715                 720
```

19

```
Ile Trp Val Ala Ser Ala Leu His Ala Ala Val Asn Phe Gly Gln Tyr
                725                 730                 735

Pro Tyr Ala Gly Tyr Leu Pro Asn Arg Pro Thr Ala Ser Arg Arg Pro
            740                 745             750

Met Pro Glu Pro Gly Ser His Asp Tyr Lys Lys Leu Gly Ala Gly Gln
        755             760             765

Lys Glu Ala Asp Met Val Phe Ile Arg Thr Ile Thr Ser Gln Phe Gln
    770             775             780

Thr Ile Leu Gly Ile Ser Leu Ile Glu Ile Leu Ser Lys His Ser Ser
785             790                 795             800

Asp Glu Val Tyr Leu Gly Gln Arg Asp Glu Pro Asp Arg Trp Thr Ser
            805             810             815

Asp Ala Lys Ala Leu Asp Ala Phe Lys Arg Phe Gly Ser Arg Leu Val
            820             825             830

Gln Ile Glu Asn Arg Ile Lys Thr Met Asn Asp Ser Pro Asp Leu Lys
        835             840             845

Asn Arg Lys Gly Pro Val Glu Met Pro Tyr Met Leu Leu Tyr Pro Asn
    850             855             860

Thr Ser Asp Val Thr Gly Glu Lys Ala Glu Gly Leu Thr Ala Met Gly
865             870             875             880

Ile Pro Asn Ser Ile Ser Ile
            885
```

<210> 17
<211> 1438
<212> DNA
<213> Zea mays

<400> 17
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tcagcggcgc cgtgtcgtcc gtcaccgtgg agaggatgct cacggtgacg gcgtcggtgg   120
aggcgtcgcc ggccatcggg cagatgtact ccagcgcgc cgtcgacgac atcggcgacc   180
tcctcggcaa gacgctgctg ctcgagctcg tcagctccga gctcgacgca aagtcgggcg   240
tggagaagac gcgggtgacg gcgtacgcgc acaagacgct gcgggagggc cactacgagg   300
cggagttcaa ggtgccggcg tcgttcgggc cggtgggcgc ggtgctggtg gagaacgagc   360
accacaagga ggtcttcatc aaggagatca agctcgtcac cggcggcgac agcagcaccg   420
ccgtcacctt cgactgcaac tcctgggtgc actccaagtt cgacaacccg gagaagcgca   480
tcttcttcac cctcaagtca tacctgccgt ccgacacgcc caaggggctg gaggacctga   540
ggaagaagga cctgcaggcg ctgcgcggcg acgggcacgg cgagcgcaag gtgttcgagc   600
gcgtctacga ctacgacgtg tacaacgacc tgggcgaccc ggacaagaac ccggcccacc   660
agcggcccgt gctgggcggc aacaagcagt acccataccc gcgccgctgc cgcaccggcc   720
gccccaggac caagaaggac cccgagacgg agatgcgcga gggccacaac tacgtgcccc   780
gcgacgagca gttctcggag gtgaagcagc tcacgttcgg ggccaccacg ctgcgctccg   840
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ccgggttcga cgccttccgc accgtcgtcc gcgcatggt caagctggtg gaggacacca  1020
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tcaaggacga ggagttcgcg aggcagacga tcgcgggggct caacccgctg tgcatccagc  1140
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20

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<210>   18
<211>   464
<212>   PRT
<213>   Zea mays

<400>   18

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Ser Ala Thr Glu Glu Val Ser Gly Ala Val Ser Ser Val Thr Val Glu
 1               5                  10                  15

Arg Met Leu Thr Val Thr Ala Ser Val Glu Ala Ser Pro Ala Ile Gly
                20                  25                  30

Gln Met Tyr Phe Gln Arg Ala Val Asp Asp Ile Gly Asp Leu Leu Gly
            35                  40                  45

Lys Thr Leu Leu Leu Glu Leu Val Ser Ser Glu Leu Asp Ala Lys Ser
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Gly Val Glu Lys Thr Arg Val Thr Ala Tyr Ala His Lys Thr Leu Arg
65                  70                  75                  80

Glu Gly His Tyr Glu Ala Glu Phe Lys Val Pro Ala Ser Phe Gly Pro
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Val Gly Ala Val Leu Val Glu Asn Glu His His Lys Glu Val Phe Ile
                100                 105                 110

Lys Glu Ile Lys Leu Val Thr Gly Gly Asp Ser Ser Thr Ala Val Thr
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Phe Asp Cys Asn Ser Trp Val His Ser Lys Phe Asp Asn Pro Glu Lys
        130                 135                 140

Arg Ile Phe Phe Thr Leu Lys Ser Tyr Leu Pro Ser Asp Thr Pro Lys
145                 150                 155                 160

Gly Leu Glu Asp Leu Arg Lys Lys Asp Leu Gln Ala Leu Arg Gly Asp
                165                 170                 175

Gly His Gly Glu Arg Lys Val Phe Glu Arg Val Tyr Asp Tyr Asp Val
                180                 185                 190

Tyr Asn Asp Leu Gly Asp Pro Asp Lys Asn Pro Ala His Gln Arg Pro
            195                 200                 205

Val Leu Gly Gly Asn Lys Gln Tyr Pro Tyr Pro Arg Arg Cys Arg Thr
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Gly Arg Pro Arg Thr Lys Lys Asp Pro Glu Thr Glu Met Arg Glu Gly
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His Asn Tyr Val Pro Arg Asp Glu Gln Phe Ser Glu Val Lys Gln Leu
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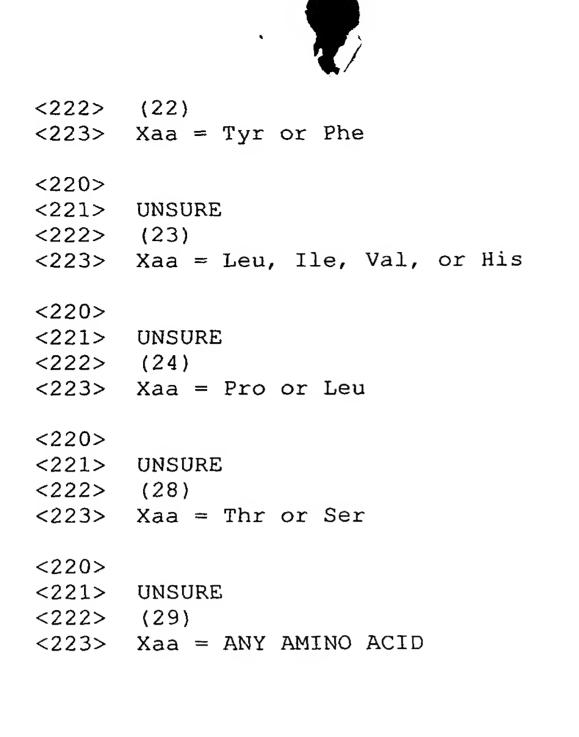
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Ala Leu Arg Pro Leu Leu Ile Asn Lys Lys Asp Leu Arg Phe Pro His
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Phe Pro Ala Ile Asp Asp Leu Phe Ser Asp Gly Ile Pro Leu Pro Ala
        290             295             300

Gln Thr Gly Phe Asp Ala Phe Arg Thr Val Val Pro Arg Met Val Lys
305             310             315             320

Leu Val Glu Asp Thr Thr Asp His Val Leu Arg Phe Glu Val Pro Glu
            325             330             335

Met Ile Glu Arg Asp Arg Phe Ser Trp Phe Lys Asp Glu Glu Phe Ala
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Arg Gln Thr Ile Ala Gly Leu Asn Pro Leu Cys Ile Gln Leu Leu Thr
        355             360             365

Glu Phe Pro Ile Lys Ser Lys Leu Asp Pro Glu Val Tyr Gly Pro Ala
    370             375             380

Glu Ser Ala Ile Thr Lys Glu Ile Leu Glu Lys Gln Met Asn Gly Ala
385             390             395             400

Leu Thr Val Glu Gln Ala Leu Ala Ala Lys Arg Leu Phe Ile Leu Asp
            405             410             415

Tyr His Asp Val Phe Leu Pro Tyr Val His Lys Val Arg Glu Leu Gln
            420             425             430

Asp Ala Thr Leu Tyr Ala Ser Arg Thr Ile Phe Phe Leu Thr Asp Leu
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Gly Thr Leu Met Pro Leu Ala Ile Glu Leu Thr Arg Pro Lys Ser Pro
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